Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-20. (Canceled).

21. (Currently Amended) A fuel cell comprising:

at least one flow field plate which has at least two flow field paths that have path lengths different from one another, including a first flow field path having a first length and first molar flow rate and a second flow field path having a second length and a second molar flow rate, the first flow field path services a first electrochemical surface area of the at least one flow field plate and the second flow field path services a second electrochemical surface area of the at least one flow field plate, ~~which at least two flow field paths respectively service at least two electrochemical surface areas of the at least one flow field plate,~~

wherein ~~each of the at least two flow field paths has a width, depth, and length dimensioned to provide a molar flow rate of a reactant through said flow field path proportional to the electrochemical surface area serviced~~ the ratio of the first molar flow rate to the second molar flow rate is equal to the ratio of the first electrochemical surface area to the second electrochemical surface area , such that ~~the at least two~~ said electrochemical surface areas of the at least one flow field plate have a current density equal to one another.

22. (Previously Presented) The fuel cell of claim 21, wherein each of said flow field paths have a total flow path resistance such that the molar flow rate, m, of the reactant that enters said flow field paths is determined by the formula:

$$m = (i \times A \times s) / (n \times F)$$

wherein

i = current density of the surface area serviced by said flow field path,

A = electrochemical surface area serviced by said flow field path,

s = fuel utilization efficiency between 0.75 and 1,

n = moles of electrons produced by the fuel cell per mole of the reactant consumed, and

F = Faraday's constant.

23. (Previously Presented) The fuel cell of claim 21, wherein the electric current density is uniform throughout the at least one flow field plate.

24. (Previously Presented) The fuel cell of claim 21, wherein the at least two flow field paths are formed of channels of fixed dimensions.

25. (Previously Presented) The fuel cell of claim 21, wherein the at least two flow field paths are formed of channels of having varying cross-sectional areas.

26. (Previously Presented) The fuel cell of claim 25, wherein the depth of the channels is constant along the length of the channels.

27. (Previously Presented) The fuel cell of claim 25, wherein the depth of the channels varies along the length of the channels.

28. (Currently Amended) A fuel cell comprising:

a first flow field plate which has at least two flow field paths that have path lengths different from one another, including a first flow field path having a first length and first molar flow rate and a second flow field path having a second length and a second molar flow rate, the first flow field path services a first electrochemical surface area of the first flow field plate and the second flow field path services a second electrochemical surface area of the first flow field plate ~~which at least two flow field paths respectively service at least two electrochemical surface areas of the first flow field plate~~;

a membrane electrode assembly; and

a second flow field plate which has at least two flow field paths, including a third flow field path having a third length and third molar flow rate and a fourth flow field path having a fourth length and a fourth molar flow rate, the third flow field path services a third electrochemical surface area of the second flow field plate and the fourth flow field path services a fourth electrochemical surface area of the second flow field plate, ~~which respectively service at least two electrochemical surface areas of the second flow field plate,~~

wherein ~~each of the at least two flow field paths, for each of the first and second flow field plates, has a width, depth, and length dimensioned to provide a molar flow rate of a reactant through said flow field path proportional to the electrochemical surface area serviced,~~ the ratio of the first molar flow rate to the second molar flow rate is equal to the ratio of the first electrochemical surface area to the second electrochemical surface area and the ratio of the third molar flow rate to the fourth molar flow rate is equal to the ratio of the third electrochemical surface area to the fourth electrochemical surface area, such that the at least two electrochemical surface areas of the first and second flow field plates have a current density equal to each other.

29. (Previously Presented) The fuel cell of claim 1, wherein the at least two flow field paths are serpentine.

30. (Previously Presented) The fuel cell of claim 1, wherein the at least two flow field paths have different numbers of turns, different lengths of straight portions, or both different numbers of turns and lengths of straight portions from one another.